

## REMARKS

Claims 1-4 are withdrawn. Claim 5 is amended. Claims 5-13 remain in the Application. Reconsideration of the pending claims is respectfully requested in view of the above amendment and the following remarks.

### **I. Claims Rejected Under 35 U.S.C. § 103(a)**

A. Claims 5, 12, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of El Gamal et al. (U.S. Patent No. 6,642,543) and Huang et al. (U.S. Patent No. 6,146,795). Applicants respectfully traverse the rejection.

To establish a *prima facie* case of obviousness, the relied upon references must teach or suggest every limitation of the claim such that the invention as a whole would have been obvious at the time the invention was made to one skilled in the art. Among other elements, amended Claim 5 recites:

“a)... a pixel array having a number of pixels, each pixel containing a drive transistor, a select transistor, a transfer transistor and a reset transistor;....

g) forming a plurality of photodiodes and a plurality of the drive transistors, the select transistors, the transfer transistors and the reset transistors in the pixel array based on the first and the second gate insulator layers and at least one transistor in the logic circuit based on the second gate insulator layer.”

Applicants submit that none of the cited references teaches or suggests at least these elements.

The Examiner recognizes that the admitted prior art does not disclose the recited steps of (a)-(e), but relies on El Gamal to supply the teaching. The Examiner asserts that element 570 in FIG. 5 of El Gamal corresponds to the claimed pixel array and read out transistors 540-550 correspond to the claimed logic circuit. Amended Claim 5 recites that each pixel in the pixel array contains a drive transistor, a select transistor, a transfer transistor and a reset transistor. Element 570 in El Gamal at most includes a source follower transistor 510 and a reset transistor

520. Thus, read out transistors 540 and 550 cannot possibly correspond to the claimed logic circuit, but rather correspond to the select transistor of the claimed pixel array.

As transistors 540 and 550 of El Gamal correspond to the select transistor of the claimed pixel array, each pixel in El Gamal's disclosure contains at least two types of transistors. One type of transistor has a thick gate insulator layer (e.g., transistors 510 and 520), and another type of transistor has a thin gate insulator layer (e.g., transistors 540 and 550). By contrast, each pixel of Claim 5 contains only one type of transistor that has two gate insulator layers.

Huang does not cure the defect of El Gamal. The Examiner cites Huang for disclosing a method of producing thicker and thinner gate oxides. However, Huang also does not teach or suggest a pixel array having a number of pixels, each pixel containing a drive transistor, a select transistor, a transfer transistor and a reset transistor, wherein the transistors of the pixel array are based on the first and the second gate insulator layers. Thus, El Gamal in view of Huang does not teach or suggest each of the elements of amended Claim 5.

Claims 12 and 13 depend from Claim 5 and incorporate the limitations thereof. Thus, for at least the reasons mention above, El Gamal in view of Huang does not teach or suggest each of the elements of these dependent claims. Accordingly, reconsideration and withdrawal of the obviousness rejection of Claims 5, 12, and 13 are request.

B. Claims 7-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of El Gamal in view of Huang as applied to Claim 5 above, and further in view of Ahn (U.S. Patent No. 5,804,491). Applicants respectfully traverse the rejection.

Claims 7-9 depend from Claim 5 and incorporate the limitations thereof. Thus, for at least the reasons mention above, El Gamal in view of Huang does not teach or suggest each of the elements of these dependent claims.

The Examiner cites Ahn for disclosing a method of removing a gate insulator by wet etching with HF or BOE. However, Ahn does not teach or suggest a pixel array having a number of pixels, each pixel containing a drive transistor, a select transistor, a transfer transistor and a reset transistor, wherein the transistors of the pixel array are based on the first and the second

gate insulator layers. Thus, El Gamal in view of Huang and further in view of Ahn does not teach or suggest each of the elements of Claims 7-9. Accordingly, reconsideration and withdrawal of the obviousness rejection of Claims 7-9 are request.

C. Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of El Gamal in view of Huang as applied to Claim 5 above, and further in view of Hori et al. (U.S. Patent No. 5,707,487). Applicants respectfully traverse the rejection.

Claims 10 and 11 depend from Claim 5 and incorporate the limitations thereof. Thus, for at least the reasons mention above, El Gamal in view of Huang does not teach or suggest each of the elements of these dependent claims.

The Examiner cites Hori for disclosing a method of removing a mask using sulfuric acid or an O2 plasma etch. However, Hori does not teach or suggest a pixel array having a number of pixels, each pixel containing a drive transistor, a select transistor, a transfer transistor and a reset transistor, wherein the transistors of the pixel array are based on the first and the second gate insulator layers. Thus, El Gamal in view of Huang and further in view of Hori does not teach or suggest each of the elements of Claims 10 and 11. Accordingly, reconsideration and withdrawal of the obviousness rejection of Claims 10 and 11 are request.

## **II. Allowable Subject Matter**

Applicants note with appreciation the Examiner's indication that Claim 6 would be allowable if rewritten in independent form. Applicants respectfully submit that the amendment to Claim 5 has obviated the need to rewrite Claim 6. As Claim 5 is in condition for allowance, Claim 6 is allowable at least for the reasons mentioned in regard to Claim 5. Accordingly, reconsideration and withdrawal of the objection of Claim 6 are requested.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentability define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

Respectfully submitted,

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Date